# CİTRIX®

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# XenApp Infrastructure Monitoring and Alerting

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## Information

This article details the performance counters and event viewer messages that can be used to gauge the health of the infrastructure components of a XenApp farm. The primary goal of this document is to provide a list of identifiers which are typically associated with a problem that is highly likely to prevent or degrade the performance of application enumeration and/or launch.

### Background

In a XenApp farm using Program Neighborhood Agent or Web Interface to publish applications, there is a group of servers which is critical to the delivery of applications. While these servers may not host applications themselves they are equally important because they either aid in the delivery of applications or store farm-wide configuration information used by all servers in the farm. Servers considered infrastructure servers hold at least one of the following roles, and in some cases, it is possible for a single server to hold multiple roles (the most common case is the XML Broker or Zone Data Collector role):

- **XML Broker**: Used by the Web Interface to enumerate published applications from the XenApp farm. This server also communicates directly with a Zone Data Collector to determine the server to route a user to, when an application is launched through the Web Interface.

- **Zone Data Collector**: Maintains dynamic farm-wide data, including the list of online and offline servers, as well as the load level of each server. The Zone Data Collector is also responsible for communicating farm-wide configuration changes to all servers in its zone.

- **Web Interface Server**: A Web server running Microsoft Internet Information Services (IIS) Web server and Citrix Web Interface which hosts the Web pages users connect to in order to enumerate and launch published applications.

- **Server hosting the data store database**: Could be another XenApp server but is typically a server running an enterprise database management system like Microsoft SQL or Oracle.

Troubleshooting a problem impacting users' ability to enumerate or launch published applications can be simplified by monitoring the status of a relatively small group of indicators on the infrastructure servers. It is very important to note that the following list is not intended to be an exhaustive list of all useful indicators but instead is focused on those most commonly used to identify which infrastructure servers are causing a problem preventing users from enumerating or launching published applications.

Proactive monitoring of these identifiers can be used to alert administrators of problem conditions before they impact end users or to quickly isolate the root cause of a problem which does cause user impact. For example, it is common to use multiple XML broker servers to enumerate and launch XenApp applications through the Web Interface. High CPU load on one XML Broker out of

four servers might cause intermittently slow application enumeration and launch performance. This scenario might be time consuming to isolate without proactive monitoring in place but is relatively trivial with the proper alerting setup. Additionally, if an administrator or help desk is notified about the condition before peak logon periods they could prevent the problem from impacting the user community.

Alerting Metrics

These metrics alert administrators when thresholds on the below counters are exceeded so they can take corrective action (the thresholds listed below are general guidelines – you may find that they need to be tuned to suit your environment).

| Performance object | Counter | Explanation | Threshold | Server(s) |
|---|---|---|---|---|
| Processor | %Processor Time\All instances | The primary indicator of processor activity, and displays, the average percentage of busy time observed during the sample interval | Alert on 80% sustained for 1 minute or longer | All XML brokers<br><br>Most Preferred and Preferred Data Collectors<br><br>Web Interface IIS server<br><br>Server hosting Data Stor |
| Memory | Available MBytes | The amount of physical memory available on the computer | Alert if less than 15% of RAM sustained for 1 minute | All XML brokers<br><br>Most Preferred and Preferred Data Collectors<br><br>Web Interface IIS server<br><br>Server hosting Data Stor |
| Logical Disk | Free Megabytes | The unallocated space on the disk drive in megabytes | This threshold would need to be determined based on the size of the drives and duties of the server. | Server hosting Data Stor<br><br>All Presentat Servers |

| | | | | Web Interface IIS server |
|---|---|---|---|---|
| Citrix MetaFrame Presentation Server | Application Resolution Time (ms) | Measures the time required to resolve the Least-Loaded Server during an application launch | A baseline would need to be established in your environment to account for increases during peak logon times before accurate thresholds can be defined | All XML brokers |
| | Data Store Connection Failure | The number of minutes that the server running Presentation Server has been disconnected from the data store | Threshold should take into account events such as reboots and scheduled maintenance | All Presentat servers |
| | Number of busy XML threads | The number of XML requests that are currently being processed. The maximum number of requests that the XML service can process at any one time is 16. | Alert on a count of 16 sustained for 1 minute or longer | All XML brokers |
| | WorkItem Queue Ready Count | The number of work items that are ready and waiting to be processed by IMA | Alert if this counter is sustained above 0 for a minute | All XML brokers Most Preferred and Preferred Data Collector: |
| | Resolution WorkItem Queue Ready Count | The number of work items (related to application launches) that are waiting to be processed by IMA | Alert if this counter is sustained above 0 for 1 minute | All XML brokers Most Preferred and Preferred Data Collector: |
| | Zone Elections Won | Amount of times this server has won an election | Alert if this counter increases by 2 in 1 hour | Most Preferred and Preferred Data Collector: |
| | Zone Elections Triggered | Amount of times this server has called for an election. This counter is incremented regardless of whether or a not a new Zone Data Collector was elected. NOTE: This counter is added with Hotfix Rollup Pack 3 for Presentation Server 4.5 | Alert if this counter increases by 2 in 1 hour | All Presentat servers |

| ASP.NET | Requests Queued | The number of requests waiting to be processed by ASP | A baseline would need to be established in your environment to calculate accurate thresholds (accounting for peak logon times) | Web Interface IIS server |
|---|---|---|---|---|
| | Requests Rejected | The number of requests rejected because the request queue was full | Alert if this counter increases by 1 | Web Interface IIS server |

## Tracking Metrics

These metrics serve as tools to gauge the impact of growth on the infrastructure and therefore thresholds for alerting do not apply to all counters.

| Performance object | Counter | Explanation | Server |
|---|---|---|---|
| Processor | %Processor Time\All instances | The primary indicator of processor activity, and displays, the average percentage of busy time observed during the sample interval | All XML brokers<br><br>Most Preferred and Preferred Data Collectors<br><br>Web Interface / IIS server<br><br>Server hosting Data Store |
| Process | Private Bytes\ImaSrv | The current size, in bytes of memory that this process (IMA) has allocated and cannot be shared with other processes | All Presentation servers |
| Citrix MetaFrame Presentation Server | Application Resolutions/sec | The number of resolutions (application launch requests) per second | All XML brokers |
| | Application Enumerations/sec | The number of non-XML-based enumerations (requests for application lists) per second | All XML brokers or servers configured to lookup farm information in PN clients |
| | Filtered Application Enumerations/sec | The number of XML-based enumerations (requests for application lists) per second | All XML brokers |
| ASP.NET | Requests Queued | The number of requests waiting to be processed | Web Interface / IIS server |
| | Requests Current | The current number of requests, both executing and queued | Web Interface / IIS server |
| | Request Execution Time | The amount of time (in milliseconds) that it took to execute the most recent request | Web Interface / IIS server |

## Critical Event Viewer Messages

These Event Viewer messages are logged when critical errors occur and administrators should be alerted so they can take corrective action.

| Event Log | Event Source | EventID(s) | Event Type | Explanation | Server |
|-----------|-------------|-----------|-----------|-------------|--------|
| Application | CitrixHealthMon | 2005 | Error | The number of failures for an HMR test has exceeded the threshold. | All Presentat servers |
| | CitrixHealthMon | 1001 | Error | An error occurred while performing the recovery action after an HMR test failure. | All Presentat servers |
| | Web Interface and Program Neighborhood at <sitePath> | 0 | Error | There are multiple events logged by Web Interface / Program Neighborhood Agent with EventID 0 – only alert on events of type Error. | Web Interface IIS server |
| System | IMAService | 3612 through 3617  3620 through 3624  3632 through 3640 | Error | There were problems communicating with the data store.  NOTE: You should consider scheduled maintenance and reboot cycles when monitoring for these events. | All Presentat servers |
| | IMAService | 3961 | Error | The IMA service had a problem sending or receiving a message from another server in the farm – this most commonly occurs because of low memory. | All Presentat servers |
| | IMAService | 4035 | Error | The IMA service has failed to respond to health checks. The health of the server should be validated as soon as possible if an event with ID 4036 has not been logged to indicate that the server has returned to a healthy state.  NOTE: This event is added with Hotfix Rollup Pack 3 for Presentation Server 4.5 | All Presentat servers |
| | IMAService | 4034 | Warning | The server where this event is logged has reported at least 5 Zone Data Collector elections within the last 1 hour. This is a high rate of elections and the state of the farm should be investigated. Check for preceding events of source IMAService and ID 4033 to identify which server(s) called for the elections.  NOTE: This event is added with Hotfix Rollup Pack 3 for Presentation Server 4.5 | All Presentat servers |

| | | | | | |
|---|---|---|---|---|---|
| | MetaFrame | 9014 | Error | The licenses required by this edition of Citrix Presentation Server are not present on the license server. Features like Web Interface Workspace control that are dependent on certain licensing types may fail. | All Presentat servers |
| | MetaFrame | 9015 | Warning | Citrix Presentation Server has entered the licensing grace period because it is unable to contact the License Server. If the grace period expires then users will be unable to connect.<br><br>NOTE: Alerts should account for periods of time when the License Server is down for maintenance and scheduled reboots. An event of source MetaFrame and ID of 9016 will be logged once the server can contact the License Server again. | All Presentat servers |
| | MetaFrame | 9017 | Error | The server has stopped accepting connections due a Licensing problem. | All Presentat servers |
| | MetaFrame | 9018 | Error | The server cannot contact the License Server.<br><br>NOTE: This will be followed by an event of source MetaFrame and ID 9019 once the server can contact the License Server. | All Presentat servers |
| | MetaFrame | 9026 | Warning | A Licensing Error occurred but a grace license has been issued to allow the user to connect. This is indicative of a problem related to Licensing that should be investigated to prevent future user impact. | All Presentat servers |
| | MetaFrame | 9027 | Error | An error occurred while obtaining a license for a user connection and the connection was denied. | All Presentat servers |

### Additional Resources

In addition to using monitoring software to send alerts when performance counter values exceed configured thresholds, you may find it useful to create pre-configured Microsoft System Monitor consoles to monitor the values of the counters listed in the, Alerting Metrics, section above. You can store System Monitor console files in a directory accessible by all administrators and use them to gauge the impact of actions taken during incident recovery.

For example, if the Web Interface server queued a number of requests because of a problem with an XML broker, new logon attempts may not immediately succeed after resolving the issue with the XML broker because of the high number of pending requests. However, a decreasing Requests Queued performance counter value on the affected Web Interface server would allow you to confirm whether or not the Web Interface server had resumed processing requests.
CTX119922 - Improving Farm Performance and Resiliency with Hotfix Rollup Pack 3

## Applicable Products

Web Interface 5.4

Web Interface 5.3

XenApp 6.5 for Windows Server 2008 R2

XenApp 6.0 for Windows Server 2008 R2

XenApp 5.0 for Windows Server 2008

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